

## **(Im)maturity of Judgment in Adolescence: Why Adolescents May Be Less Culpable Than Adults**

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**A crucial step in the establishment of effective policies and regulations concerning legal decisions involving juveniles is the development of a complete understanding of the many factors—psychosocial as well as cognitive—that affect the evolution of judgment over the course of adolescence and into adulthood. This study examines the influence of three psychosocial factors (responsibility, perspective, and temperance) on maturity of judgment in a sample of over 1,000 participants ranging in age from 12 to 48 years. Participants completed assessments of their psychosocial maturity in the aforementioned domains and responded to a series of hypothetical decision-making dilemmas about potentially antisocial or risky behavior. Socially responsible decision making is significantly more common among young adults than among adolescents, but does not increase appreciably after age 19. Individuals exhibiting higher levels of responsibility, perspective, and temperance displayed more mature decision-making than those with lower scores on these psychosocial factors, regardless of age. Adolescents, on average, scored significantly worse than adults, but individual differences in judgment within each adolescent age group were considerable. These findings call into question recent arguments, derived from studies of logical reasoning, that adolescents and adults are equally competent and that laws and social policies should treat them as such. Copyright © 2000 John Wiley & Sons, Ltd.**

The existence of a juvenile justice system separate from the adult criminal justice system is predicated on two fundamental assumptions about adolescents: (1) that

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they are less capable of mature judgment than adults and are therefore less culpable for any offenses that they commit; and (2) that they are more amenable to treatment than adults, and therefore are more likely to profit from rehabilitation (Scott & Grisso, 1997). Over the last decade, however, policy-makers in the United States have called for dramatic changes in law and social policy that challenge the developmental assumptions on which the existence of the juvenile justice system rests. Specifically, many policy-makers and politicians, in response to growing fears about violent juvenile crime, have called for lowering the age at which juveniles accused of crimes can be transferred to adult court and exposed to adult sanctions. This "jurisdictional boundary," once firmly fixed at 17 or 18, has been lowered in many states to 14 or even younger, and some states no longer have a lower age limit for criminal prosecution at all (Griffin, Torbet, & Szymanski, 1999). In a growing number of localities, a 12-year-old child accused of a serious crime will be tried and sentenced in the criminal justice system. Similar proposals to lower the age of transfer to adult court are now beginning to surface in several European nations.

Without empirical evidence on the differential culpability and amenability of adolescents versus adults, there is no basis for knowing where to set the jurisdictional boundary or for evaluating whether a proposed change in boundary is sensible in light of developmental research. Perhaps because changes in jurisdictional boundary have been proposed only very recently, little systematic research has examined whether adolescents are inherently less culpable or more amenable than adults. With respect to culpability, we do not know, for example, whether juveniles are developmentally less mature than adults in ways that impair their judgment and make them inherently less accountable for their actions and, if so, at what age individuals demonstrate a level of maturity that qualifies them for adult standards of accountability. With respect to amenability, we do not know whether there are predictable changes in malleability over the course of adolescence and, if so, whether there is a turning point in development after which individuals become relatively unaffected by attempts at rehabilitation.

The present study focuses on the first of these issues—whether there are developmental changes during the adolescent years in psychological characteristics relevant to determinations of culpability.<sup>1</sup> In particular, we ask whether there are predictable patterns of change in individuals' antisocial judgments between adolescence and adulthood and, if so, whether these patterns of change are related to age-related changes in various components of maturity. Because culpability refers to the extent to which a person can be considered blameworthy or deserving of punishment for a given behavior, the evaluation of culpability is largely a moral decision. Nevertheless, if any such moral standard is to be applied to offenders of varying levels of maturity, it is important that evaluations of maturity (and subsequent determinations of culpability) be grounded in an accurate understanding of the factors that influence how adolescents make decisions.

Roughly speaking, accounts of adolescent immaturity within the literature on psychological development fall into two broad categories: those that attribute youthful immaturity to *cognitive* differences between adolescents and adults (i.e., deficiencies in the way adolescents think), and those that attribute immaturity to *psychosocial*

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<sup>1</sup>For the purposes of the present work, we use the term "adolescence" to refer to the range of ages most affected by the ongoing transfer debate—from about age 13 to age 18.

differences (i.e., deficiencies in adolescents' social and emotional capability). These cognitive and psychosocial differences are assumed to result in differences in "maturity of judgment," a term we use here to refer to the complexity and sophistication of the process of individual decision-making as it is affected by a range of cognitive, emotional, and social factors. We believe that "judgment" better captures the mix of cognitive and psychosocial processes of interest than does "decision-making," a term that traditionally has had a more purely cognitive flavor within the psychological literature. For the purposes of this study, therefore, we use the term "judgment" to refer to the cognitive and psychosocial factors that influence decisions, while we use the term "decision-making" to refer to the actual choices made.

Two points about what we mean by "maturity of judgment" warrant some additional elaboration. The first is that "judgment," within the framework we employ in this study, refers to the *process* of decision-making, and not to any particular decision outcome. *Maturity* of judgment, then, refers to the way that the process of decision-making changes with development. Under the law, one's level of culpability may depend upon the degree of maturity of the process through which a decision was made. Put another way, the question of whether a juvenile offender "ought to have known better" cannot be answered by looking only at the nature of his or her behavior. The very question relies on an assumption that there is an underlying set of characteristics that influences one's decision-making and one's resultant behavior. This set of characteristics, which evolves from "definitely could not have known better" to "definitely should have known better" during the course of development, is by definition what we call maturity of judgment.

The second point about maturity of judgment is that within the framework we have advanced (Cauffman & Steinberg, 1995; Steinberg & Cauffman, 1996), judgment is neither exclusively cognitive nor exclusively psychosocial; it is the byproduct of both sets of influences. Accordingly, an individual can exhibit poor judgment because of some sort of intellectual deficiency, such as faulty logic or ignorance of some crucial piece of information; because of some emotional or social shortcoming, such as impulsivity or susceptibility to peer pressure; or both (Scott, Reppucci, & Woolard, 1995). Thus, we would argue that a young teen who robs a liquor store with his friends exhibits poor judgment regardless of whether he does so because he miscalculates the likelihood of violence, or whether he does so because he was encouraged by his friends or feared their disapproval. The question is not whether robbing a liquor store is a bad decision. The question is whether this decision arose from factors that put adolescents, relative to adults, at an inherent disadvantage when faced with choices in potentially antisocial situations.

Having made this theoretical distinction between decisions and the maturity of judgment that underlies them, we can now turn to the question of what, exactly, those factors are that differentiate someone who "ought to know better" from one who does not. To date, most research on adolescent judgment and decision-making, and on whether adolescents' judgment is less mature than that of adults, has focused on the cognitive processes involved and has more or less ignored emotional and social influences on decision-making. Most of these efforts to identify the underlying cognitive factors that account for age differences in risk-taking and antisocial decision-making have not been successful (Fischhoff, 1992; Furby & Beyth-Marom, 1992). Contrary to the stereotype of adolescents as markedly egocentric, for example, or as doomed by deficiencies in logical ability, studies show that adoles-

cents (at least, from age 15 on) are no more likely than adults to suffer from the "personal fable" (the belief that one's behavior is somehow not governed by the same rules of nature that apply to everyone else, as when a cigarette smoker believes that he is immune to the health effects of smoking) and no less likely than adults to employ rational algorithms in decision-making situations (Jacobs-Quadrel, Fischhoff & Davis, 1993). In fact, there is substantial evidence that adolescents are well aware of the risks they take (Alexander, Kim, Ensminger, Johnson, Smith, & Dolan, 1990), and that increasing adolescents' awareness of various risks has little impact on their decision-making outside the laboratory (Office of Technology Assessment, 1991a,b,c; Rotheram-Borus & Koopman, 1990). Moreover, there is little evidence that growth in the logical abilities relevant to decision-making occurs in any systematic way much past age 16 (Overton, 1990).

The failure of researchers to find strong evidence of cognitive differences between adolescents and adults that might account for developmental differences in decision-making has led to two very different sorts of speculation. One line of reasoning, derived from behavioral decision theory, is that adolescents and adults employ the same logical processes when making decisions, but differ in the sorts of information they use and the priorities they hold (Furby & Beyth-Marom, 1992). According to this view, for example, adolescents engage in unprotected sex more often than adults not because adolescents suffer from a "personal fable" that permits them to deny the possibility of pregnancy, or because they are misinformed about the risks of the activity, but because, in the calculus of a 16-year-old, the potential benefits of unprotected sex (spontaneity, heightened physical pleasure) simply outweigh in value the potential costs (pregnancy, infection). Within this model, age differences in risky decision-making stem from differences in concerns, not competencies (Beyth-Marom, Austin, Fischhoff, Palmgren, & Jacobs-Quadrel, 1993; Furby & Beyth-Marom, 1992; Gardner & Herman, 1990). This distinction, between concerns and competencies, is directly relevant to any discussion of adolescent culpability, since it is the assumption that adolescents are less competent than adults (and not that adolescents merely have different priorities) that undergirds the very existence of a separate juvenile justice system. Overall, there is little evidence from studies of *cognitive* development to support the assertion that adolescents, once they have turned 16, should be viewed as less culpable than adults.

This is not the end of the story, however. Indeed, a different perspective on the question of age differences in decision-making has been suggested by several writers, including the present authors, who have argued that there may be developmental differences between adolescents and adults in *non-cognitive* realms that account for age differences in behavior and that may have implications for assessments of culpability (e.g., Cauffman & Steinberg, 1995; Scott et al., 1995; Steinberg & Cauffman, 1996). We and others have suggested, specifically, that observed differences in risky decision-making between adolescents and adults may well reflect differences in capabilities, and not simply priorities, but that the particular capabilities involved are not those which are assessed by measures of logical reasoning.

According to our view, there may well exist psychosocial factors that affect the sorts of decision individuals make, that follow a developmental progression between adolescence and adulthood, and that bear on the question of adolescent culpability. In several publications (e.g., Cauffman & Steinberg, 1995; Steinberg & Cauffman, 1996), we have proposed a model of maturity of judgment that emphasizes three

broad categories of psychosocial factors that are likely to affect the ways in which individuals make decisions, including decisions to commit antisocial or criminal acts. These three categories of psychosocial factors include (1) *responsibility*, which encompasses such characteristics as self-reliance, clarity of identity, and independence; (2) *perspective*, which refers to one's likelihood of considering situations from different viewpoints and placing them in broader social and temporal contexts; and (3) *temperance*, which refers to tendencies to limit impulsivity and to evaluate situations before acting. These categories are not mutually exclusive, nor are they without some cognitive elements. The ability to appreciate the long term consequences of an action, for example, is an important element of perspective, but requires the cognitive ability to weigh risks and benefits, and is related to the ability to forgo immediate gratification, which is an element of temperance. Although systematic data on the developmental course of each of these phenomena, their interrelations, and their joint and cumulative impact on decision-making are lacking, most major theories of adolescent psychosocial development suggest that there are significant developmental changes in several aspects of responsibility, perspective, and temperance over the course of adolescence. More important, there is reason to suspect that developments in these areas may potentially affect individuals' decision-making and risk-taking in ways that ought to be taken into account in making culpability determinations.

Although there has been some research to date on the development of various aspects of responsibility, perspective, and temperance during adolescence (for a review, see Steinberg & Cauffman, 1996), few studies have compared adolescents and adults directly on these dimensions, and fewer still have attempted to examine the relations between these psychosocial elements of mature judgment and decision-making in situations relevant to legal concerns. These are the goals of the present study. We hypothesize that elements of responsibility, perspective, and temperance develop during the course of adolescence. Because we argue that these factors are key elements of what we define to be "maturity of judgment," we further hypothesize that those who are responsible, temperate, and circumspect will make better decisions. (For example, they will be less likely to rob liquor stores.) We do not (nor *can* one) measure maturity of judgment directly. Rather, we hypothesize that maturity of judgment depends upon certain psychosocial qualities and test this by examining whether these qualities affect the decisions that participants make under various circumstances, including those that involve decision-making in antisocial contexts. The extent to which these psychosocial factors do, indeed, affect decisions provides an indication of how accurately we have identified the composite elements of maturity of judgment. We do not assess cognitive elements of mature judgment, as these have received considerable research attention; we focus instead on exploring the less clearly understood role of psychosocial factors in the decision-making process.

## METHOD

### Sample

The data for the present analyses were obtained from self-report questionnaires administered to eighth, tenth, and twelfth grade students as well as college students

attending schools in the Philadelphia area. (See Table 1 for descriptive information on the study sample.) The junior high and high school were both located in the same school district and were selected to yield a diverse sample in terms of ethnicity, socioeconomic status, and type of community (suburban and urban) that was demographically comparable to the student body of the college from which the adult sample was drawn. In general, the sample is evenly divided among males and females and is quite diverse with respect to other demographic variables: notably, approximately 40% of the respondents are from ethnic minority groups and nearly one-third come from homes in which the parents have not attended school beyond the 12th grade. Similar patterns in gender, ethnicity, and socioeconomic status were observed within each age group (with the exception that female adults outnumbered male adults four to one, a factor that we take into account in subsequent analyses).

Because the adult sample was drawn from a college population, it may differ from the high-school sample not only in age but also in other dimensions that may distinguish individuals who go on to post-secondary education from those who do not. Accordingly, we conducted all analyses with and without eliminating high-school participants with a grade-point average lower than a C in order to make the high-school group comparable to the population of students admitted to the college from which adult participants were recruited. Because the pattern of age differences observed in the analyses using only the higher-performing high-school students was not significantly different from the pattern observed using the entire sample, we report only the analyses conducted using the complete sample.

Table 1. Characteristics and demographics of the study sample

	Total sample ( <i>n</i> = 1,015)			College sample ( <i>n</i> = 205)	
	8th grade ( <i>n</i> = 417)	10th grade ( <i>n</i> = 238)	12th grade ( <i>n</i> = 155)	Under 21 ( <i>n</i> = 115)	21 & over ( <i>n</i> = 90)
Mean age (SD)	13.7 (.73)	15.5 (.59)	17.5 (.63)	19.4 (.62)	25 (5.5)
Sex					
Male	50%	45%	43%	17%	27%
Female	50%	55%	57%	83%	73%
Parental education					
Some high school	10%	5%	6%	15%	22%
High school graduate	29%	24%	25%	20%	17%
Some college	37%	47%	46%	37%	36%
College & beyond	24%	24%	23%	28%	25%
Ethnicity					
African-American	24%	22%	26%	24%	23%
Asian	3%	3%	1%	25%	17%
Hispanic	3%	2%	4%	1%	5%
White	63%	67%	62%	45%	44%
Other	7%	6%	7%	5%	11%

## Procedure

A “passive consent” procedure was used to obtain tacit approval from the parents of eighth, tenth, and twelfth grade students, whereby parents were provided an opportunity to withhold consent for their children’s participation.<sup>2</sup> All parents with children in the participating school grades were informed, by first-class mail, of the date and nature of the study three weeks in advance of the scheduled questionnaire administration. Parents were asked to call or write their child’s school or the investigator of the study if they did not want their child to participate in the study. We also obtained active consent from all participating adolescents. Students in attendance in participating schools on the days of survey administration were informed about the purpose of the study and asked to complete the questionnaire. All students were informed that their participation in the study was voluntary and that they could withdraw from the study at any time. Of the potential participants, 5% were withheld from the study by their parents, approximately 5% of the students elected not to participate, and 8% were absent from school on the day of administration. The sample of adults was recruited through announcements in undergraduate psychology classes inviting students to participate in the study in exchange for extra credit; informed consent from these individuals was obtained at the time of survey administration.

## Measures

### *Demographic Information*

Participants were asked to report their age, sex, ethnicity, and socioeconomic status. Socioeconomic status was based upon parents’ level of education, as research has indicated that parental education may be the most stable component of a family’s social class (Steinberg, Mounts, Lamborn, & Dornbusch, 1991). Participants were partitioned into five age groups. Adolescent participants were categorized by grade (8th, 10th, or 12th), while adults were divided into two groups of roughly equal size: one composed of those under 21 years of age, and one composed of those 21 and older.

## **Components of Psychosocial Maturity: Responsibility, Perspective, and Temperance**

### *Responsibility*

Responsibility was assessed using the personal responsibility scale of the Psychosocial Maturity Inventory (PSMI Form D; Greenberger, Josselson, Knerr, & Knerr,

<sup>2</sup>Studies show that the use of “active consent” procedures (i.e., procedures requiring active parental written consent in order for their adolescents to participate in research) screen out disproportionate numbers of students who are dissatisfied with school, whose parents have lower education levels, who have low self-esteem, and, most importantly for the present study, who exhibit higher levels of risk-taking (Dent, Galaif, Sussman, & Stacy, 1993).

1974) which has excellent validity and psychometric properties (Greenberger & Bond, 1976). Items on the personal responsibility subscale tap *self-reliance* (i.e., feelings of internal control and the ability to make decisions without extreme reliance on others, e.g., "Luck decides most things that happen to me" [reverse coded]); *identity* (i.e., self-esteem, clarity of the self, and consideration of life goals, e.g., "I change the way I feel and act so often that I sometimes wonder who the 'real' me is." [reverse coded]); and *work orientation* (i.e., pride in the successful completion of tasks, e.g., "I hate to admit it, but I give up on my work when things go wrong." [reverse coded]). The scale contains 30 items to which participants respond on a four-point Likert scale ranging from "strongly agree" to "strongly disagree," with higher scores indicating more responsible behavior. In the present sample, the internal consistency of the scale was .87.

### *Perspective*

Two distinct aspects of perspective were assessed. First, the ability to see short and long term consequences (i.e., "time perspective," also referred to as "future orientation") was measured using the Consideration of Future Consequences Scale (CFC) (Strathman, Gleicher, Boninger, & Edwards; 1994). The CFC ( $\alpha = .76$ ) consists of 12 items on a Likert-type scale ranging from 1 (extremely uncharacteristic) to 5 (extremely characteristic). For each of the statements (e.g., "I often do things that don't pay off right away but will help in the long run.") participants are asked to indicate how characteristic the statement is of them. This scale is highly correlated with other measures of future orientation, such as the Stanford Time Perspective Inventory (Zimbardo, 1990). Because the CFC scale was originally designed for use with college students, we simplified the wording of the items so that participants ranging in age from early adolescence to young adulthood could complete the scale. (For consistency, we used the simplified version for all participants, regardless of age.) Second, the Consideration of Others subscale from the Weinberger Adjustment Inventory (WAI) (Weinberger & Schwartz, 1990) was used to assess how often participants take other people's perspectives into account (e.g., social perspective taking). The five-item scale ( $\alpha = .73$ ) asks participants to rate from 1 to 5 (1 = almost never to 5 = almost always) how often over the "past year or more" their behavior could be described by statements such as "Before I do something, I think about how it will affect the people around me." CFC and the Consideration of Others scores ( $r = .37, p < .001$ ) were converted to standardized units and averaged to produce an overall perspective score for use in subsequent analyses. The resultant perspective measure was scaled to range from 0 (low perspective) to 5 (high perspective).

### *Temperance*

Participants responded to items tapping aspects of temperance, including impulse control and self-restraint from aggressive behavior, as assessed using subscales of the Weinberger Adjustment Inventory. Participants were asked to describe themselves on a five-point Likert-type scale (1 = almost never, to 5 = almost always) regarding what they have usually been like or felt like over the "past year or more." A 12-item

temperance score ( $\alpha = .83$ ) was calculated by aggregating subscales measuring *impulse control* (e.g., “I do things without giving them enough thought” [reverse coded]) and *suppression of aggression* (e.g., “I lose my temper and ‘let people have it’ when I’m angry” [reverse coded]).

### *Psychosocial Maturity*

According to the theoretical framework described earlier, psychosocial maturity is defined to encompass elements of responsibility, perspective, and temperance. Accordingly, a composite measure of “psychosocial maturity” was constructed by averaging the  $z$ -scores of the responsibility, perspective, and temperance aggregates described above and renormalizing the resulting scale to range from 0 to 5. Statistical analyses were performed using this continuous variable. In figures depicting the relation between psychosocial maturity and other variables, we divide the sample into tertiles reflecting different levels of psychosocial maturity.

We recognize that the operational definitions of psychosocial maturity and its subcomponents, responsibility, perspective, and temperance, may not provide what would ultimately be considered a definitive assessment of the hypothesized underpinnings of maturity of judgment as outlined in the introduction to this article. Because the study of psychosocial maturity in relation to decision-making is in the early stages, the emphasis of the present study is on determining whether a representative set of psychosocial factors is meaningfully related to decision-making, and whether these factors vary across adolescence and between adolescence and adulthood. We anticipate that future research will address the issue of developing a more complete picture of the myriad psychosocial factors that may eventually be shown to influence maturity of judgment.

### **Antisocial Decision-Making**

Antisocial decision-making was assessed via the Youth Decision-Making Questionnaire (YDMQ) (Ford, Wentzel, Wood, Stevens, & Siesfeld, 1990). The YDMQ presents participants with a set of hypothetical situations that involve choosing between antisocial and socially accepted courses of action (e.g., shoplifting versus not shoplifting). For each hypothetical situation, participants are asked to indicate, on a four-point scale ranging from definitely choosing the responsible action to definitely choosing the irresponsible action, how they would behave if they were confronted with such a dilemma ( $\alpha = .76$ ). For example, “You’re out shopping with some of your close friends and they decide to take some clothing without paying for it. You don’t think it’s a good idea, but they say you should take something too.” Participants are then presented with three possible scenarios. First, “Suppose nothing bad would happen to you (such as getting arrested) if you took the clothing. Would you shoplift or would you refuse to take the item?” The next scenario asks the participant to imagine that something bad *would* happen, and the third scenario suggests that the participant doesn’t know what would happen. We refer to these variations in consequences as (a) consequences, (b) no consequences, and (c) unknown consequences. For each scenario and each consequence, participants are

asked to indicate whether or not they would do the antisocial action on a four-point scale ranging from (for the above example), “definitely shoplift” to “definitely refuse to shoplift.”

The measure employed in the present study was modified somewhat from Ford et al.’s (1990) original instrument in two ways. First, in order to satisfy time constraints, and to provide the most clear-cut choices between antisocial and socially accepted behavior, only five of Ford’s original nine scenarios (the scenarios with the most clear-cut choices between right and wrong) were selected for inclusion in the present study: (1) smoking marijuana; (2) shoplifting; (3) joy-riding in a stolen car; (4) cheating on a test; and (5) deceiving one’s employer. Second, the “unknown consequences” scenario was added, since this more accurately reflects many real-life situations.

Two caveats about our measure of decision-making are in order. First, it is important to note that, for the purposes of this study, we define “antisocial” decision-making in terms of the extent to which individuals make socially sanctioned choices. We recognize that, in theory, the maturity of a decision is independent of its social acceptance. While such arguments are philosophically interesting, legal professionals who make decisions about the adjudication and treatment of juvenile offenders are interested in knowing whether juveniles have the competencies necessary to abide by the law. Our decision to equate “good” decision-making with socially accepted behavior is consistent with everyday practice in the courts, and we have taken care to ensure that the “right” and “wrong” choices in the scenarios used for this measure are not of the sort that might be subject to reasonable debate.

The second caveat concerns the use of hypothetical dilemmas to assess decision-making, and, more specifically, the extent to which one can generalize responses to such dilemmas to real-world decision-making. The use of hypothetical dilemmas to index responsibility, decision-making, moral development, and antisocial inclinations has a long history in the study of adolescent development (Berndt, 1979; Bronfenbrenner, 1967; Devereux, 1970; Fischhoff, 1992; Furby & Beyth-Marom, 1992; Kohlberg, 1969; Steinberg & Silverberg, 1986). Although individuals’ responses to hypothetical dilemmas often exhibit higher levels of moral reasoning than are employed in real-world versions of the same situations (Arsenio & Ford, 1985), responses to hypothetical decision-making situations are often used to index judgment and reasoning. Furthermore, previous work employing similarly structured hypothetical vignettes has supported the validity of such instruments in studies of adolescent development and behavior (Berndt, 1979; Brown, Clasen, & Eicher, 1986; Devereux, 1970; Steinberg & Silverberg, 1986). For example, adolescents who endorse antisocial responses to hypothetical dilemmas are in fact more likely to commit delinquent acts, more likely to use illegal substances, and more likely to come from family environments shown to be associated with increased risk for problem behavior (Brown et al., 1986; Devereux, 1970; Lamborn, Mounts, Steinberg, & Dornbusch, 1991; Lamborn & Steinberg, 1993).

## RESULTS

The present study examines the development of several psychosocial factors, as well as their relation to antisocial decision-making. The results of the study are organized

as follows: First, we discuss age differences in antisocial decision-making. Second, we discuss the development of responsibility, perspective, and temperance. Next, the relations between these psychosocial factors and antisocial decision-making are considered. Finally, the role of age in the decision-making process is re-examined in the context of the observed relations between psychosocial factors and decision-making. To ensure that age differences in decision-making and psychosocial development were not skewed by the over-representation of females in the adult sample, all analyses were performed separately among males and females. These segregated analyses yielded age differences consistent with those obtained for the entire sample, which we describe in further detail in the following sections.

### Age Differences in Decision-Making

Based on significant, though modest, correlations between decision-making and age ( $r = .15, p < .0001$ ) as well as between decision-making and sex ( $r = .20, p < .0001$ ), we conducted a  $2 \times 5$  multivariate analysis of variance (MANOVA) using gender and age as the independent variables. Data were analyzed using the three separate components of the decision-making situation as the dependent variables (i.e., consequential, non-consequential, and unknown consequences).

Antisocial decision-making was significantly affected by both age, (multivariate  $F(12, 2596) = 5.29, p < .0001$ ), and sex ( $F(3, 981) = 5.71, p < .001$ ), but not by the interaction between the two ( $F(12, 2596) = 1.1, ns$ ). As shown in Figure 1 and Table 2, the univariate analyses indicate that antisocial decision-making differed by

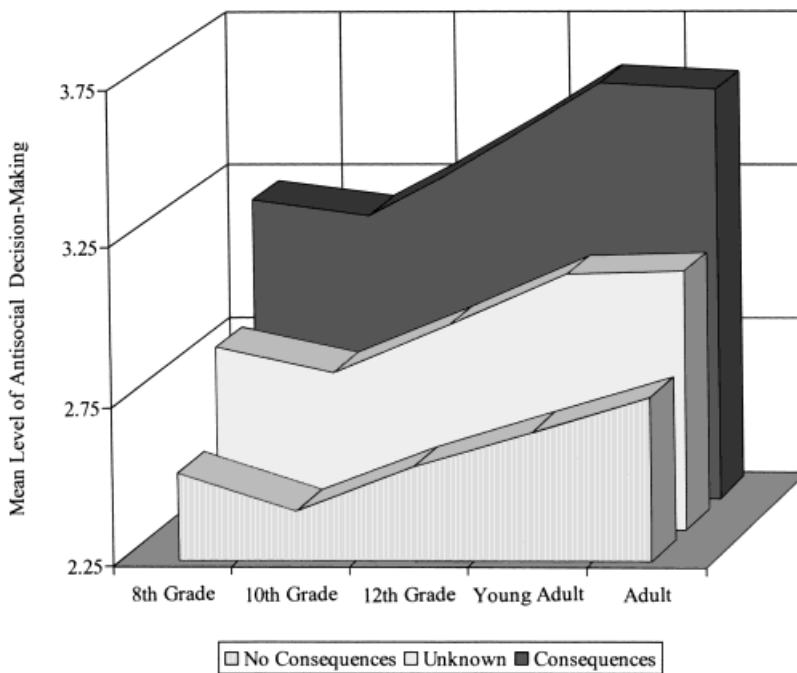


Figure 1. Age difference in antisocial decision-making.

Table 2. Age different in antisocial decision-making

Decision making	Grade	Mean	SD	Singnificant Scheffe post hoc tests ( $p < .05$ )
Consequences	8th	3.21	.64	8th <i>vs</i> YA, A
	10th	3.16	.68	10th <i>vs</i> 12th, YA, A
	12th	3.36	.50	12th <i>vs</i> 10th, YA
	Young adult (YA)	3.59	.36	YA <i>vs</i> 8th, 10th, 12th
	Adult (A)	3.57	.39	A <i>vs</i> 8th, 10th
No consequences	8th	2.53	.73	8th <i>vs</i> A
	10th	2.41	.73	10th <i>vs</i> YA, A
	12th	2.55	.60	
	Young adult (YA)	2.66	.65	YA <i>vs</i> 10th
	Adult (A)	2.77	.59	A <i>vs</i> 8th, 10th
Unknown consequences	8th	2.83	.64	8th <i>vs</i> YA, A
	10th	2.75	.66	10th <i>vs</i> YA, A
	12th	2.90	.55	
	Young adult (YA)	3.06	.46	YA <i>vs</i> 8th, 10th
	Adult (A)	3.07	.47	A <i>vs</i> 8th, 10th
Composite	8th	2.86	.61	8th <i>vs</i> YA, A
	10th	2.77	.64	10th <i>vs</i> YA, A
	12th	2.94	.48	
	Young adult (YA)	3.10	.43	YA <i>vs</i> 8th, 10th
	Adult (A)	3.14	.43	A <i>vs</i> 8th, 10th

age regardless of whether we examined decision-making with potential negative consequences, ( $F(4, 983) = 13.02, p < .0001$ ), without consequences ( $F(4, 983) = 4.63, p < .001$ ) or with unknown consequences ( $F(4, 983) = 5.88, p < .0001$ ). As expected, Figure 1 shows that participants are most likely to endorse antisocial choices when it is anticipated that there are no negative consequences of their decisions. This is true regardless of age.

Univariate analyses also revealed significant sex differences in decision-making (consequences ( $F(1, 983) = 16.42, p < .0001$ ), no consequences ( $F(1, 983) = 7.89, p < .005$ ), or unknown consequences ( $F(1, 983) = 8.43, p < .005$ ), with females less likely than males to engage in antisocial decision-making under all three conditions (see Table 3). To simplify further analyses, decision-making scores were averaged over the three levels of consequences; when this is done, the same age differences,  $F(4, 993) = 8.27, p < .001$ , and sex differences  $F(1, 993) = 12.67, p < .0001$ , are observed. Based on these findings, our further analyses of decision-making scores used the composite measure only.

### Age Differences in Psychosocial Maturity

Three psychosocial factors (responsibility, perspective, and temperance) were hypothesized to be key elements of mature judgment, and therefore to influence decision-making. Before investigating the relations between measures of these psychosocial characteristics and the measure of decision-making, we examined age differences in these traits, individually, and determined the extent to which they are intercorrelated.

Table 3. Gender differences in antisocial decision-making and psychosocial development

	Mean score		<i>F</i> statistic
	Males	Females	
Decision-making			
Consequences	3.13	3.42	16.42***
No consequences	2.42	2.63	7.89**
Unknown consequences	2.75	2.95	8.43**
Composite measure	2.77	3.00	12.67***
Psychosocial development			
Responsibility	3.01	3.12	ns
Perspective	2.62	2.89	4.69*
Temperance	2.68	2.99	21.06**
Maturity	2.56	3.30	8.34**

\* $p < .05$ .\*\* $p < .005$ .\*\*\* $p < .0001$ .

Responsibility, perspective, and temperance were all significantly intercorrelated (for responsibility and perspective,  $r = .40$ ; for perspective and temperance,  $r = .36$ ; for temperance and responsibility,  $r = .40$ ; all  $p_s < .001$ ). A 2 (gender)  $\times$  5 (age) MANOVA was performed on these three aspects of psychosocial maturity. Analyses revealed significant differences in psychosocial maturity by both age, ( $F(12, 2580) = 11.39, p < .0001$ ) and sex, ( $F(3, 975) = 3.86, p < .01$ ) but not as a function of the interaction between the two, ( $F(12, 2580) = .49, ns$ ). Univariate analyses indicate an effect of age on each psychosocial variable: responsibility, ( $F(4, 977) = 8.53, p < .0001$ ), perspective, ( $F(4, 977) = 29.14, p < .0001$ ), and temperance, ( $F(4, 977) = 7.95, p < .0001$ ). As seen in Table 4, psychosocial maturity improves as a function of age, with 8th and 10th graders displaying the lowest levels of maturity. Gender was also found to affect psychosocial development. Univariate analyses indicate that females demonstrate more perspective ( $F(1, 977) = 5.27, p < .05$ ) and are more temperate, ( $F(1, 977) = 9.50, p < .005$ ) than males (see Table 3). There were, however, no significant differences between the genders in responsibility ( $F(1, 977) = 2.84, ns$ ).

In order to assess the development of psychosocial maturity overall (calculated by averaging the responsibility, perspective, and temperance scores), a 2 (gender)  $\times$  5 (age) analysis of variance (ANOVA) was performed using the composite measure of psychosocial maturity. Results indicate significant differences in psychosocial maturity as a function of both age,  $F(4, 992) = 20.22, p < .001$ , and gender,  $F(1, 992) = 9.75, p < .005$ , but not as a function of the interaction between the two. As shown in Figure 2 and Table 3, older participants exhibit higher levels of psychosocial maturity, and females exhibit greater psychosocial maturity than males.

### Age, Psychosocial Development, and Antisocial Decision-Making

Based on the significant correlations between decision-making and responsibility, perspective, and temperance (for responsibility and decision-making,  $r = .31$ ; for

Table 4. Age differences in components of psychosocial maturity: responsibility, perspective, and temperance

Components of psychosocial maturity	Grade	Mean	SD	Significant scheffe post hoc tests ( $p < .01$ )
Responsibility	8th	2.99	.43	8th <i>vs</i> 12th, YA, A
	10th	3.03	.45	10th <i>vs</i> 12th, YA
	12th	3.18	.39	12th <i>vs</i> 8th, 10th
	Young adult (YA)	3.23	.39	YA <i>vs</i> 8th, 10th
	Adult (A)	3.18	.47	A <i>vs</i> 8th
Perspective	8th	2.55	.66	8th <i>vs</i> 10th, 12th, YA, A
	10th	2.76	.70	10th <i>vs</i> 8th YA, A
	12th	2.78	.67	12th <i>vs</i> 8th YA, A
	Young adult (YA)	3.25	.53	YA <i>vs</i> 8th, 10th, 12th
	Adult (A)	3.28	.59	A <i>vs</i> 8th, 10th, 12th
Temperance	8th	2.74	.97	8th <i>vs</i> YA, A
	10th	2.69	.95	10th <i>vs</i> YA, A
	12th	2.87	.92	12th <i>vs</i> YA, A
	Young adult (YA)	3.29	.70	YA <i>vs</i> 8th, 10th, 12th
	Adult (A)	3.25	.68	A <i>vs</i> 8th, 10th, 12th
Psychosocial maturity	8th	2.84	.72	8th <i>vs</i> 12th, YA, A
	10th	2.92	.78	10th <i>vs</i> YA, A
	12th	3.11	.63	12th <i>vs</i> YA, A
	Young adult (YA)	3.49	.52	YA <i>vs</i> 8th, 10th, 12th
	Adult (A)	3.45	.62	A <i>vs</i> 8th, 10th, 12th

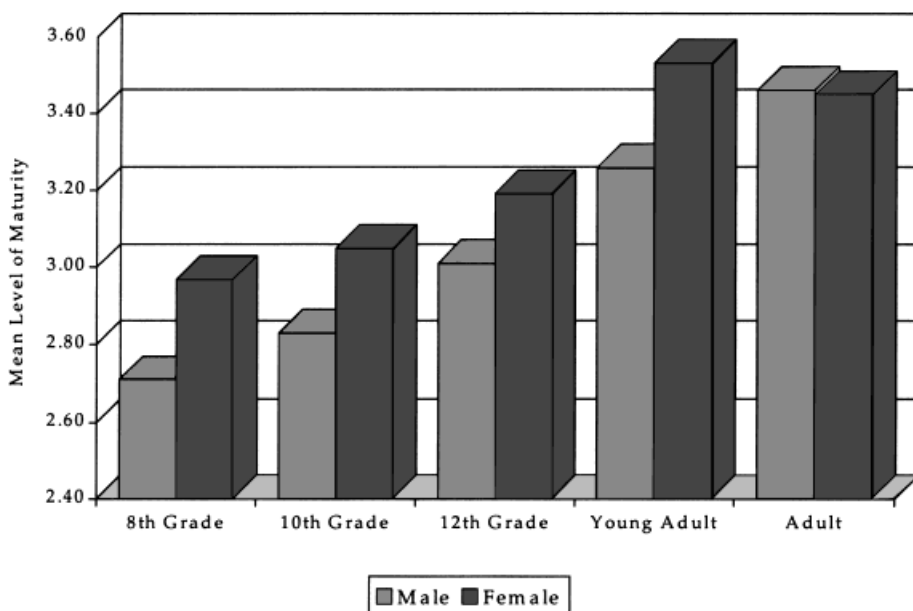


Figure 2. Age and gender differences in psychosocial maturity.

perspective and decision-making,  $r = .41$ ; for temperance and decision-making,  $r = .47$ ; all  $p_s < .001$ ), a multiple regression analysis was performed to test the hypothesis that differences in decision-making are, in fact, attributable to differences

in components of psychosocial maturity. All three psychosocial variables were entered into the regression equation simultaneously, and, as expected, this block of psychosocial variables was a highly significant predictor of decision-making ( $F(3,986) = 135.0, p < .0001$ ). Examination of beta weights indicates that less antisocial decision-making is demonstrated by individuals who are more responsible ( $\beta = .07, p < .05$ ), who have more perspective ( $\beta = .26, p < .0001$ ), and who are more temperate ( $\beta = .35, p < .0001$ ). This relation was further tested by regressing the measure of decision-making on the composite measure of psychosocial maturity. As expected, individuals who are, overall, more psychosocially mature exhibit less antisocial decision-making ( $\beta = .48, p < .0001$ ). In light of this, and in light of the fact that each of the psychosocial variables is significantly related to antisocial decision-making, we used the global measure of psychosocial maturity in further analyses.

One central hypothesis of this study is that age differences in antisocial decision-making are attributable to differences in psychosocial maturity. This question was addressed in two ways. First, in hierarchical regressions, we entered age at step one and the composite measure of psychosocial maturity at step two. If the age effect is, as we believe, a result of increases in psychosocial maturity, then any significant effect of age at step one will become nonsignificant when the psychosocial measure is introduced into the equation. In other words, antisocial decision-making should be less prevalent among participants with higher levels of psychosocial maturity, regardless of age. This is indeed the case: Age is a significant predictor of decision-making ( $\beta = .08, p < .01$ ). However, when psychosocial maturity is entered on the second step of the equation, the effect of age no longer remains significant. In fact, results indicate that psychosocial maturity, rather than age, is the more powerful predictor of decision-making ( $\beta = .52, p < .0001$ ). As shown in

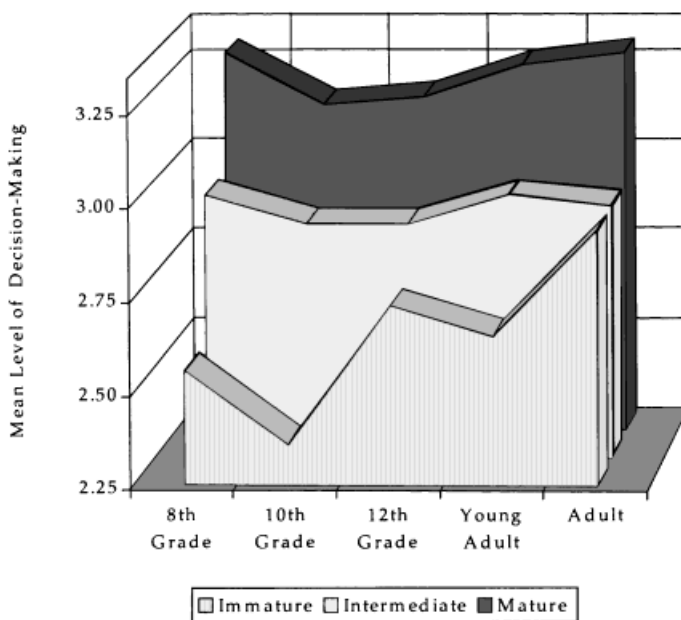


Figure 3. Antisocial decision-making and mature psychosocial development.

Figure 3, the decision-making scores of adolescents and adults with the highest levels of psychosocial maturity are greater than those with the lowest levels, regardless of age.

We have shown that antisocial decision-making is negatively correlated with levels of responsibility, perspective, and temperance (and with the overall measure of psychosocial maturity constructed using these three factors). We also have demonstrated that, although there are significant age differences in antisocial decision-making, these differences become nonsignificant when the effect of psychosocial maturity is taken into account. To test the prediction that, among participants of the *same* age, psychosocial maturity should predict decision-making, multiple regression analyses were conducted separately within each age group. Overall, the analyses indicate that psychosocial maturity significantly predicts decision-making within each of the five age groups considered. (For 8th graders,  $b = .50, p < .0001$ ; for 10th graders,  $b = .60, p < .0001$ ; for 12th graders,  $b = .34, p < .001$ ; for young adults,  $b = .47, p < .0001$ ; and for older adults,  $b = .40, p < .0005$ .) At all ages, individuals who are more psychosocially mature, as indexed by measures of responsibility, perspective, and temperance, are less likely to make antisocial decisions.

## DISCUSSION

The present study examined the relations among age, psychosocial maturity, and antisocial decision-making in a sample of more than 1,000 adolescents and adults between the ages of 12 and 48. As anticipated, individuals were found to differ significantly in their psychosocial maturity (in the domains of responsibility, perspective, and temperance), as well as in their antisocial decision-making, as a function of age. Moreover, antisocial decision-making was more strongly influenced by psychosocial maturity than by age. This suggests that, as hypothesized, the measured characteristics of responsibility, perspective, and temperance are, indeed, a part of what we think of as "maturity of judgment." While there are likely to be other factors (such as cognitive ability) that affect overall maturity of judgment, as well, we can nevertheless conclude that it is justifiable to consider an individual's levels of responsibility, perspective, and temperance in describing his or her "maturity of judgment."

Although socially responsible decision-making is more common among older participants than among younger ones, at least in the hypothetical situations studied here, it does not appear to increase appreciably after age 19. College students under the age of 21 perform similarly to those over 21, suggesting that once the developmental changes of adolescence are complete, maturity of judgment may stabilize. Based on age differences in the composite index of psychosocial maturity employed in this study, the steepest inflection point in the developmental curve occurs sometime between 16 and 19 years. This appears to be especially true with respect to the development of perspective and temperance, but less true with regard to the development of responsibility, which appears to develop more gradually. Thus, the period between 16 and 19 marks an important transition point in psychosocial development that is potentially relevant to debates about the drawing of legal boundaries between adolescence and adulthood. More fine-grained analyses of

developmental differences within this three-year period are necessary before more specific conclusions can be drawn.

This is not to say that, as a class, adolescents are irresponsible, solipsistic, or reckless in any absolute sense. It is important to remember that responsibility, perspective, and temperance—the three components of maturity of judgment studied here—are more predictive of antisocial decision-making than chronological age alone. Indeed, psychosocially mature 13-year-olds demonstrate less antisocial decision-making than psychosocially immature adults. Figure 3 demonstrates that significant numbers of adolescents exhibit below average or above average levels of maturity of judgment, while among adults there are very few individuals in the most immature category. The significant numbers of psychosocially mature *and* immature adolescents suggest that it is important to consider individual differences, rather than simply age, when assessing decision-making ability or maturity of judgment among adolescents. Nevertheless, it does appear as if the average adolescent is less responsible, more myopic, and less temperate than the average adult. Sometimes developmental stereotypes turn out to be true.

The results of this research, on the *psychosocial* contributors to decision-making, stand in contrast to those obtained from studies of the *cognitive* contributors to decision-making, which generally find few differences between adults and middle adolescents. Indeed, the results of this study provide a partial answer to a question that has long perplexed psychologists interested in explaining age differences in risk-taking: if adolescents and adults process information in similar ways, why do adolescents take more risks? The answer, we believe, is that risk-taking is the byproduct of an interaction between cognitive and psychosocial factors. It is adolescents' deficiencies in the psychosocial domain, not the cognitive domain, that lead them to take more chances and to get into more trouble.

Before interpreting the results in further detail, we first acknowledge several of the study's limitations. The fact that our study included a significant number of adult participants over the age of 21 allowed us to obtain insight into the development of decision-making beyond the high-school and early college years. In addition, the sample studied was both economically and ethnically diverse, allowing the results to be applied to populations beyond the white-middle class samples usually studied in this sort of research. The fact that our adult sample was limited to college students warrants caution in interpreting the findings, however, since there are likely to be significant psychosocial, cognitive, and decision-making differences between adults who enroll in college and those who do not. It is important to note, though, that the social origins of the college students in this sample were quite similar to those of the participating adolescents, and that the study's findings were not changed by eliminating from the sample those high-school participants with grades low enough to make them ineligible to attend the college in question. There may, of course, still exist differences between the college sample and the proportion of high-school participants with "C or better" grades who elect not to pursue higher education. While caution is thus warranted in interpreting comparisons between these groups, the fact that the results were not significantly affected by omitting the students with the poorest grades suggests that the magnitude of any residual education effect is likely to be small.

Another of the most problematic aspects of controlled decision-making studies is that they typically rely on hypothetical dilemmas (Fischhoff, 1992). As noted in the

“Measures” section, responses to hypothetical dilemmas are often different from responses to real-world situations. While such hypothetical dilemmas do, nevertheless, provide useful information regarding decision-making tendencies, an obvious limitation of this approach in the assessment of decision-making is that such laboratory situations minimize the potential effects of psychosocial factors on judgment, especially in the realms of responsibility and temperance. It is thus interesting to note that even for hypothetical dilemmas, individuals’ psychosocial maturity influences their responses. Nevertheless, psychologists interested in age differences in judgment must begin to move beyond the laboratory. Examples of the sort of real-world research needed include work by Ambuel and Rappaport (1992), who studied cognitive competence among teenagers who were visiting a medical clinic for a pregnancy test; and by Lewis (1980), who examined age differences in factors influencing abortion decisions among participants awaiting the results of pregnancy tests. Future studies should attempt to examine the ways in which responsibility, temperance, and perspective come into play in these and other real-world settings.

A related issue is that, as is common in the type of research described here, the present study relies on self-reports of psychosocial characteristics and decision-making tendencies. Despite the assurances of anonymity provided to the participants, social desirability biases are likely to skew responses toward more socially acceptable (less antisocial) responses. Participants might therefore report less antisocial decision-making and more psychosocial maturity than an independent evaluation might indicate. Here again, however, this effect is more likely to minimize the observed differences between groups than to exaggerate it.

Finally, we should note that our choices of specific psychosocial factors to explore in this study were motivated by a desire to explore those areas theoretically most likely to influence decision-making. Future research will be necessary to generate a more comprehensive understanding of the many psychosocial characteristics not specifically explored here, and to determine with greater precision the relative importance of such different characteristics in influencing mature judgment. By establishing the merit of considering psychosocial influences on decision-making, the present study lays a foundation for more detailed empirical explorations of these relations.

How can the results of this study be used to inform the debate on juvenile culpability and waiver? Are the observed age differences in psychosocial maturity of judgment appreciable and consistent enough to warrant the drawing of legal distinctions between adolescents and adults (or among adolescents of different ages)? The present study indicates that, indeed, psychosocial characteristics continue to develop during late adolescence, and that these changes result in significant declines in antisocial decision-making. In our view, the age differences observed here are *appreciable* enough to warrant drawing a legal distinction. They may not, however, be *consistent* enough, since significant numbers of adolescents exhibit high enough levels of maturity of judgment to outperform less mature adults. Individuals differ considerably in the timing of the development of psychosocial maturity, making it difficult to define a chronological boundary between immaturity and maturity. Nevertheless, it is clear that important progress in the development of these characteristics occurs some time during late adolescence, and that these changes have a profound effect on the ability to make consistently mature decisions.

Our finding that adolescents are less psychosocially mature than adults in ways that affect their decision-making in antisocial situations lends scientific credibility to the argument that juvenile offenders may warrant special treatment because of diminished responsibility. Indeed, we can even be more specific about the *ways* in which adolescents' psychosocial functioning is diminished: they score lower on measures of self-reliance and other aspects of personal responsibility, they have more difficulty seeing things in long-term perspective, they are less likely to look at things from the perspective of others, and they have more difficulty restraining their aggressive impulses. Our reading of relevant rulings, moreover, suggests that when American legal opinions refer to individuals' maturity (or immaturity) of judgment, the courts have in mind something close to the psychosocial factors we have discussed. For example, in *Kent v. United States* (1966), the United States Supreme Court reviewed the District of Columbia's statutory criteria for waiver to adult court, which included such factors as "the *sophistication and maturity* of the juvenile as determined by consideration of his home, environmental situation, *emotional attitude*, and pattern of living" (italics added).

Our analysis suggests that a developmental perspective can inform, but cannot resolve, the transfer debate. Even setting aside the weighty political, practical, and moral questions that impinge on the discussion, the developmental analysis we have presented here does not point to any one age that politicians and practitioners should use in formulating transfer policies or practices. Rather, the framework we propose argues strongly against transfer policies that are solely offense-based and argues instead for a return to offender-based policies that permit the relevant decision-makers (e.g., judges, prosecutors, and defense attorneys) to exercise judgment about individual offenders' maturity and eligibility for transfer. This approach would be workable both within a system that employed judicial waiver and within one that relied on prosecutorial discretion. To the extent that transfer via legislative exclusion is solely offense based, however, it is a bad policy from a developmental perspective.

The irony of employing a developmental perspective in the analysis of transfer policy is that the exercise reveals the inherent inadequacy of policies that draw bright-line distinctions between adolescence and adulthood. Indeed, an analysis of the developmental literature indicates that variability among adolescents of a given chronological age is the rule, not the exception. In order to be true to what we know about development, a fair transfer policy must be able to accommodate this variability.

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